

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Loess Breaks

Site ID: R067BY052CO

Major Land Resource Area: 67B – Central High Plains, Southern Part

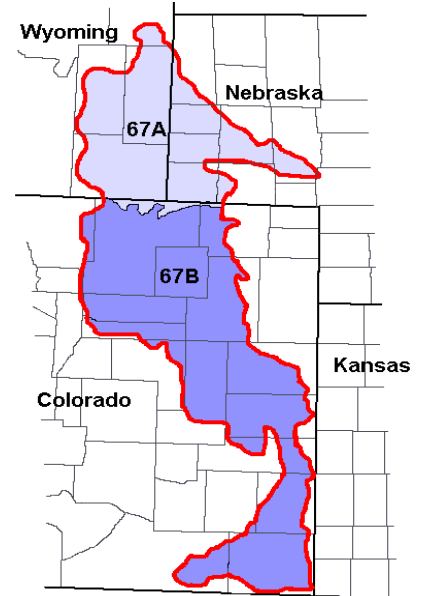
Physiographic Features

This site occurs on rolling to hilly slopes.

Landform: hill

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3800	5600
Slope (percent):	9	45
Water Table Depth (inches):	60	60
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	moderate	high



Climatic Features

The mean average annual precipitation varies from 12 to 16 inches per year depending on location and ranges from less than 8 inches to over 20 inches per year. Approximately 75 percent of the annual precipitation occurs during the growing season from mid-April to late-September. Snowfall can vary greatly from year to year but averages 35 to 45 inches per year. Winds are estimated to average about 9 miles per hour annually, ranging from 10 miles per hour during the spring to 9 miles per hour during late summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring periods of high winds with gusts to more than 90 miles per hour.

The average length of the growing season is 142 days, but varies from 129 to 154 days. The average date of first frost in the fall is September 28, and the last frost in the spring is about May 9. July is the hottest month and December and January are the coldest. It is not uncommon for the temperature to exceed 100 degrees F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to -35 degrees F or lower.

Site Type: Rangeland
MLRA: 67B – Central High Plains, Southern Part

Loess Breaks
R067BY052CO

Growth of native cool season plants begins about March 15 and continues to about June 15. Native warm season plants begin growth about May 15 and continue to about August 15. Regrowth of cool season plants occurs in September and October of most years, depending on moisture.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	129	154
Freeze-free period (days):	151	178
Mean Annual Precipitation (inches):	12	16

Average Monthly Precipitation (inches) and Temperature (°F):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.32	0.36	12.0	45.1
February	0.26	0.38	15.9	50.9
March	0.83	0.87	22.3	58.9
April	1.28	1.38	30.1	69.1
May	2.32	2.49	39.9	78.0
June	1.93	2.57	49.0	88.7
July	1.42	2.31	55.0	93.9
August	1.07	2.38	53.5	91.9
September	1.02	1.40	43.8	83.8
October	0.89	1.00	32.5	72.9
November	0.52	0.53	20.9	57.4
December	0.34	0.37	11.9	46.9

Climate Stations		Period	
Station ID	Location or Name	From	To
CO0945	Briggsdale	1948	2000
CO4076	Holly	1918	2000
CO9147	Windsor	1948	1990

For local climate stations that may be more representative, refer to <http://www.wcc.nrcs.usda.gov>.

Influencing Water Features

Wetland Description:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are very deep, well drained, and moderately permeable. These soils occur on hills. The available water capacity is typically moderate to high. The soil surface layer is typically 3 to 6 inches thick.

Water flow patterns should be evident on most of this site due to slope and vegetation morphology. They may be broken and irregular in appearance or connected with some minor erosion. This site should exhibit slight to no evidence of rills or wind scoured areas. Pedestaled plants would be common, especially in water flow patterns. Sub-surface soil layers are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site include: Colby

Other soil series that have been correlated to this site include: none

Parent Material Kind: loess
Parent Material Origin: mixed
Surface Texture: loam
Surface Texture Modifier: none

Subsurface Texture Group: loamy
Surface Fragments $\leq 3''$ (% Cover): 0
Surface Fragments $> 3''$ (%Cover): 0
Subsurface Fragments $\leq 3''$ (% Volume): 0
Subsurface Fragments $> 3''$ (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	well
Permeability Class:	moderate	moderate
Depth (inches):	60	80
Electrical Conductivity (mmhos/cm)*:	0	2
Sodium Absorption Ratio*:	0	0
Soil Reaction (1:1 Water)*:	7.9	9.0
Available Water Capacity (inches)*:	8	9.5
Calcium Carbonate Equivalent (percent)*:	1	15

*These attributes represent 0-40 inches in depth or to the first restrictive layer.

Plant Communities

Ecological Dynamics of the Site:

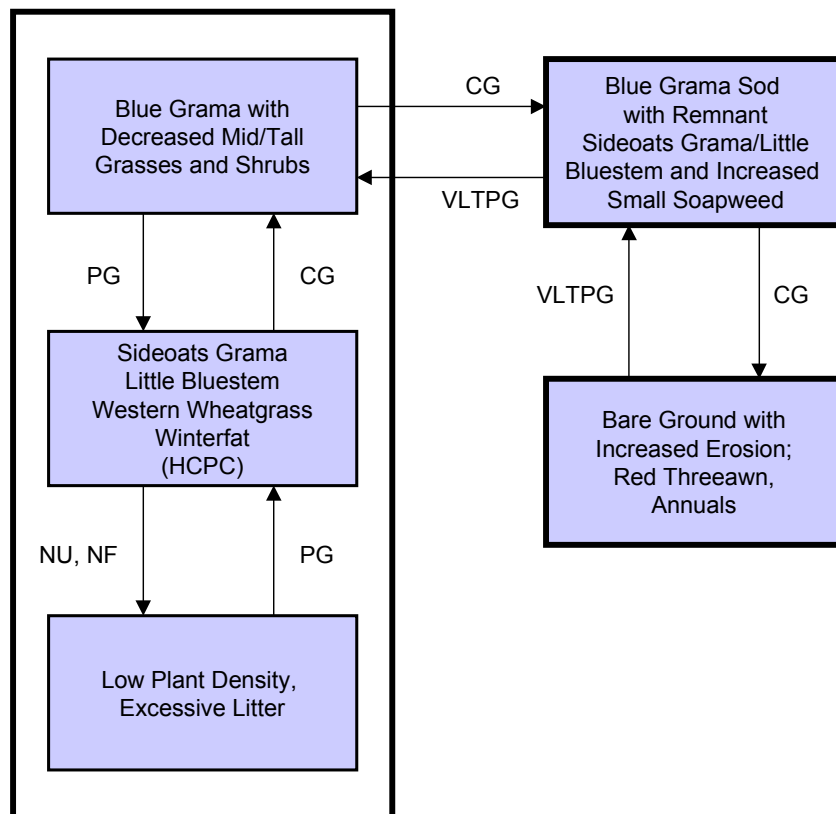
Continuous grazing without adequate recovery opportunities between grazing events causes this site to deteriorate. Grasses such as little bluestem, green needlegrass, sideoats grama and western wheatgrass will decrease in both frequency and production. If adequate recovery periods between grazing events are not allowed during the growing season, blue grama will increase and eventually form into a patchy sodbound appearance. Mid and tall grasses can eventually be removed from the plant community. Over the long-term, continuous use in combination with high stock densities will result in large amounts of bare ground. Species such as red threeawn, sand dropseed, small soapweed, broom snakeweed and cheatgrass will increase or invade the site.

Tillage is not recommended on this site due to steep shallow soils and associated low production potential.

The historic climax plant community (description follows the plant community diagram) has been determined by study of rangeland relic areas, areas protected from excessive disturbance, seasonal use pastures, short duration/time controlled grazing and historical accounts.

The following diagram illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes are discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CG - continuous grazing without adequate recovery opportunity, **HCPC** - Historic Climax Plant Community, **LTPG** - long-term prescribed grazing (>40 years), **NF, NU** - no fire, non-use, **PG** - prescribed grazing with adequate recovery opportunity, **VLTPG** - very long term prescribed grazing (>80 years)

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Sideoats Grama, Little Bluestem, Western Wheatgrass, Winterfat (HCPC)		
			Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1	630 - 810	70 - 90
sideoats grama	Bouteloua curtipendula	BOCU	1	180 - 225	20 - 25
little bluestem	Schizachyrium scoparium	SCSC	1	135 - 180	15 - 20
blue grama	Bouteloua gracilis	BOGR2	1	90 - 180	10 - 20
western wheatgrass	Pascopyrum smithii	PASM	1	90 - 180	10 - 20
green needlegrass	Nassella viridula	NAVI4	1	45 - 90	5 - 10
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	27 - 63	3 - 7
big bluestem	Andropogon gerardii	ANGE	1	9 - 45	1 - 5
prairie sandreed	Calamovilfa longifolia	CALO	1	9 - 45	1 - 5
switchgrass	Panicum virgatum	PAVI2	1	9 - 45	1 - 5
Indiangrass	Sorghastrum nutans	SONU2	1	0 - 27	0 - 3
Indian ricegrass	Achnatherum hymenoides	ACHY	1	9 - 27	1 - 3
hairy grama	Bouteloua hirsuta	BOHI2	1	0 - 18	0 - 2
prairie junegrass	Koeleria macrantha	KOMA	1	0 - 18	0 - 2
buffalograss	Buchloe dactyloides	BUDA	1	9 - 18	1 - 2
plains muhly	Muhlenbergia cuspidata	MUCU3	1	9 - 18	1 - 2
sand dropseed	Sporobolus cryptandrus	SPCR	1	9 - 18	1 - 2
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 9	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 9	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 9	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	27 - 45	3 - 5
threadleaf sedge	Carex filifolia	CAFI	1	9 - 27	1 - 3
other perennial grasses		2GP	1	9 - 45	1 - 5
FORBS			2	45 - 135	5 - 15
dotted gayfeather	Liatris punctata	LIPU	2	9 - 18	1 - 2
purple prairie clover	Dalea purpurea	DAPU5	2	9 - 18	1 - 2
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	9 - 18	1 - 2
American vetch	Vicia americana	VIAM	2	0 - 9	0 - 1
bigtop dalea	Dalea enneandra	DAEN	2	0 - 9	0 - 1
Colorado greenthread	Thelesperma filifolium	THFI	2	0 - 9	0 - 1
cutleaf evening-primrose	Oenothera coronopifolia	OECO2	2	0 - 9	0 - 1
hairy goldaster	Heterotheca villosa	HEVI4	2	0 - 9	0 - 1
Hood's phlox	Phlox hoodii	PHHO	2	0 - 9	0 - 1
ironplant goldenweed	Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida	MAPIP4	2	0 - 9	0 - 1
narrowleaf poisonvetch	Astragalus pectinatus	ASPE5	2	0 - 9	0 - 1
penstemon	Penstemon spp.	PENST	2	0 - 9	0 - 1
rush skeletonplant	Lygodesmia juncea	LYJU	2	0 - 9	0 - 1
sessile nailwort	Paronychia sessiliflora	PASE	2	0 - 9	0 - 1
silky crazyweed	Oxytropis sericea	OXSE	2	0 - 9	0 - 1
slimflower scurfpea	Psoralidium tenuiflorum	PSTE5	2	0 - 9	0 - 1
upright prairie coneflower	Ratibida columnifera	RACO3	2	0 - 9	0 - 1
variable senecio	Packera neomexicana var. mutabilis	PANEM	2	0 - 9	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	2	0 - 9	0 - 1
wooly Indianwheat	Plantago patagonica	PLPA2	2	0 - 9	0 - 1
wooly locoweed	Astragalus mollissimus	ASMO7	2	0 - 9	0 - 1
wormwood	Artemisia dracunculus	ARDR4	2	0 - 9	0 - 1
other perennial forbs		2FP	2	9 - 45	1 - 5
SHRUBS			3	45 - 135	5 - 15
winterfat	Krascheninnikovia lanata	KRLA2	3	18 - 45	2 - 5
fourwing saltbush	Atriplex canescens	ATCA2	3	9 - 27	1 - 3
fringed sagewort	Artemisia frigida	ARFR4	3	9 - 18	1 - 2
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 9	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 9	0 - 1
purple pincushion	Escobaria vivipara var. vivipara	ESVIV	3	0 - 9	0 - 1
skunkbush sumac	Rhus trilobata	RHTR	3	0 - 9	0 - 1
small soapweed	Yucca glauca	YUGL	3	0 - 9	0 - 1
spreading buckwheat	Eriogonum effusum	EREF	3	0 - 9	0 - 1
other native shrubs		2SHRUB	3	9 - 27	1 - 3
Annual Production lbs./acre			LOW RV* HIGH		
GRASSES & GRASS-LIKES			320 - 720 - 920		
FORBS			40 - 90 - 140		
SHRUBS			40 - 90 - 140		
TOTAL			400 - 900 - 1200		

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. *RV - Representative Value.

Plant Community Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition table shown above has been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities will be determined by the decision makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Sideoats Grama, Little Bluestem, Western Wheatgrass and Winterfat Plant Community

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This community developed with grazing by large herbivores and is suited to grazing by domestic livestock. Historically, fires likely occurred infrequently. This plant community can be found on areas that are grazed and where the grazed plants receive adequate periods of recovery during the growing season. The potential vegetation is about 70-90% grasses and grass-likes, 5-15% forbs and 5-15% woody plants.

The principal grasses that dominate this community are little bluestem, sideoats grama and western wheatgrass. Secondary grasses include blue grama, green needlegrass and needleandthread. Threadleaf and sun sedge are common. Dominant forbs are dotted gayfeather, scarlet globemallow, upright prairie coneflower and purple prairie clover. Winterfat and fourwing saltbush are important shrubs. Tall warm season grass species are found principally on “catsteps” or terracettes, and short drainageways due to a more favorable moisture regime.

This is a sustainable plant community in terms of soil stability, watershed function and biological integrity. Litter is properly distributed where vegetative cover is continuous. Some litter movement may occur on steeper slopes. Decadence and natural plant mortality is very low. Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. This community is resistant to many disturbances except continuous grazing, tillage and/or development into urban or other uses. Areas having lost all vegetation, such as livestock and vehicle trails are subject to high erosion rates and extreme runoff.

Total annual production, during an average year, ranges from 400 to 1200 pounds of air-dry weight and will average 900 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6708

Growth curve name: Warm season/cool season co-dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	8	20	35	18	10	5	2	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events will shift this plant community to the *Blue Grama with Decreased Mid/Tall Grasses and Shrubs Plant Community*.

- Non-use (rest) and absence of fire will move this plant community to the *Low Plant Density, Excessive Litter Plant Community*. Lack of use causes the plants to become less vigorous, crowns of plants begin to die, and plant canopy begins to open up with more bare ground apparent.
- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Sideoats Grama, Little Bluestem, Western Wheatgrass, Winterfat Plant Community (HCPC)*.

Blue Grama with Decreased Mid/Tall Grasses and Shrubs Plant Community

This plant community developed with continuous grazing without adequate recovery periods during the growing season. The dominant grass is blue grama. Little bluestem and sideoats grama are still present as secondary grasses in the community. Prairie sandreed, Indiangrass, big bluestem, switchgrass, green needlegrass, needleandthread and western wheatgrass have been significantly reduced. Forbs present include hairy goldaster, western ragweed and slimflower scurfpea. Fourwing saltbush and winterfat are reduced. Small soapweed and fringed sagebrush have increased.

Management changes can move this plant community toward HCPC given adequate time. Soil erosion may be a concern as major grasses and shrub species have been reduced in frequency and production. Less litter is obvious. Where flow paths are connected, rills and pedestalled plants may begin to form. Water and nutrient cycles as well as energy flow have been impaired. Caution should be taken not to push this plant community across an ecological threshold where restoration back to a sustainable plant community would be difficult.

Total annual production, during an average year, ranges from 250 to 650 pounds of air-dry weight and will average 450 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6708

Growth curve name: Warm season/cool season co-dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	8	20	35	18	10	5	2	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery opportunities between grazing events will shift this plant community across an ecological threshold toward the *Blue Grama Sod with Remnant Sideoats Grama and Increased Small Soapweed Plant Community*. Weedy species are starting to invade and almost all mid-grasses are removed.
- Prescribed grazing that allows adequate recovery opportunities between grazing events and proper stocking will move this plant community towards the *Sideoats Grama, Little Bluestem, Western Wheatgrass and Winterfat Plant Community (HCPC)*.

Low Plant Density, Excessive Litter Plant Community

This plant community developed under many years of non-use (rest) and lack of fire. Plant species resemble the HCPC however, frequency and production will be reduced. Eventually, litter levels can become high enough to cause stagnation and mortality of various species such as little bluestem, sideoats grama, green needlegrass and needleandthread. Bunchgrasses typically develop dead centers and rhizomatous species form small communities because of a lack of stimulation by grazers.

Management changes can easily shift this plant community toward the HCPC. Non-disturbance will initially increase litter levels, minimizing soil erosion. In advanced stages of non-use (rest) or lack of fire, plants will begin to die off and bare areas will increase causing an erosion concern.

Total annual production, during an average year, ranges from 300 to 900 pounds of air-dry weight and will average 650 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6704

Growth curve name: Warm season dominant, excess litter; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	1	25	45	20	7	2	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing which allows for adequate recovery opportunity and proper stocking will shift this plant community towards the *Sideoats Grama*, *Little Bluestem*, *Western Wheatgrass* and *Winterfat Plant Community (HCPC)*.

Blue Grama Sod with Remnant Sideoats Grama/Little Bluestem and Increased Small Soapweed Plant Community

This plant community developed with continued grazing without adequate recovery periods between grazing events. Blue grama dominates this community and has developed into a sodbound condition that is commonly found on gentler slopes. Little bluestem and sideoats grama are scattered in remnant amounts. Tall grasses have been almost totally removed where not protected by remaining shrubs or steep topography. Forbs and shrubs that have increased are western ragweed, hairy goldaster, fringed sagebrush and small soapweed. Compared to HCPC, nearly all the mid-grasses are absent and some weedy annual species such as cheatgrass and kochia have invaded the area.

Management changes cannot easily move this plant community toward HCPC. Species diversity and production have been greatly reduced. Lack of proper recovery periods have cause dramatic shifts away from the HCPC. Soil erosion is expedited by increased rill formation, especially on steeper slopes. Water and nutrient cycles are impaired. Desertification is obvious.

Production ranges from 100 to 300 pounds of air-dry vegetation per acre per year and averages 200 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6707

Growth curve name: Warm season dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	3	20	45	20	10	2	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery opportunity between grazing events will shift this plant community across an ecological threshold toward the *Bare Ground with Increased Erosion; Red Threeawn, Annuals Plant Community*.
- Very long term prescribed grazing that provides adequate recovery opportunity between grazing events and proper stocking will move this plant community toward the *Blue Grama with Decreased Mid and Tall Grasses and Shrubs Plant Community* assuming an adequate seed/vegetative source is available. This transition may take upwards of 80 years or more to achieve.

Bare Ground with Increased Erosion; Red Threeawn and Annuals Plant Community

This plant community develops with continual grazing and lack of recovery periods during the growing season. Bare ground has significantly increased. Localized areas of blue grama and little bluestem can still be found in protected areas surrounded by bare ground. Red threeawn, sand dropseed and ring muhly are the main surviving perennial grasses. Small soapweed remains. Cheatgrass, sixweeks fescue and kochia have increased or invaded. Compared to HCPC, all desirable grasses, forbs and shrubs have been removed or extremely reduced.

Advanced stages of erosion are apparent. Rills are obvious and small gullies can form on areas where vegetation has been removed. Pedestalled plants with exposed roots are common. Renovation costs would be significant.

Total annual production, during an average year, ranges from 50 to 150 pounds of air-dry weight and will average 100 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6707

Growth curve name: Warm season dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	3	20	45	20	10	2	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Very long term prescribed grazing which incorporates adequate recovery opportunities between grazing events and proper stocking will move this plant community toward the *Blue Grama Sod with Remnant Sideoats Grama/Little Bluestem and Increased Small Soapweed Plant Community* assuming an adequate seed/vegetative source is available. This transition may take 80 years or more to achieve.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Sideoats Grama, Little Bluestem, Western Wheatgrass and Winterfat Plant Community

Common bird species expected on this community include Cassin's and Brewer's sparrow, chestnut collared longspur, lark bunting, western meadowlark, and ferruginous and Swainson's hawks. The combination of mid-tall grasses and shrubs provides habitat for greater and lesser prairie chicken in the eastern parts of this site. Scaled quail may also use this site.

White-tailed and black-tailed jackrabbit, badger, pronghorn, coyote, swift fox, plains pocket gopher, long-tailed weasel, and several species of mice are mammals that commonly use this plant community. Reptiles using this community include western rattlesnake, bullsnake, plains garter snake (if water is in home range), western hognose snake, racer, western box turtle, and six-lined racerunner.

Blue Grama with Decreased Mid/Tall Grasses and Shrubs Plant Community

All HCPC species are expected in this plant community, however, the loss of some of the vegetative structural diversity in this plant community make it less attractive to the HCPC species.

Low Plant Density, Excessive Litter Plant Community

Although the HCPC species are still expected here, the degraded habitat conditions will limit wildlife carrying capacity.

Blue Grama Sod with Remnant Sideoats Grama/Little Bluestem and Increased Small Soapweed Plant Community and Bare Ground with Increased Erosion; Red Threeawn and Annuals Plant Community

The loss of shrubs and taller grasses in these plant communities results in a shift of bird species away from the HCPC birds. Lark bunting, chestnut-collared longspur, and western meadowlark use declines and Cassin's sparrow stop using the communities altogether. Habitat conditions improve for long-billed curlew, McCown's longspur, burrowing owl, mountain plover, killdeer, and horned lark. Ferruginous and Swainson's hawks are frequent users of these communities.

Most mammals will be the same as in the HCPC, however jackrabbit, black-tailed prairie dog, desert cottontail, and thirteen-lined ground squirrel use will increase because of the changing plant community. Reptiles using these communities are the same as in the HCPC.

Other Potential Species

The plains spadefoot is the only common species of frog or toad inhabiting grasslands in Eastern Colorado. This species requires water for breeding. Tiger salamanders may be found on grassland sites, but require a water body for breeding. Either of these species may be found in any plant community if seasonal water requirements are met. Mule and white-tailed deer may use this ecological site, however the shrub cover is too low to provide escape or hiding cover. On ecological site locations near riparian areas, deer will use the vegetation for feeding. Deer mouse is a common grassland species found on the eastern plains. Big brown bats will use any plant community on this ecological site if a building site is in the area. The gray wolf, black-footed ferret, and wild bison used this ecological site in historic times. The wolf and ferret are thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

Animal Preferences (Quarterly – 1,2,3,4[†])

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-like							
big bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
blue grama	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D
bottlebrush squirreltail	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U
buffalograss	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D
green needlegrass	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
hairy grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
Indian ricegrass	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D
Indiangrass	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
little bluestem	U D P U	N D D N	U D P U	N D D N	N D D N	U D P U	U D P U
needleandthread	U P D D	N D N D	U P D D	N D N D	N D N D	U P D D	U P D D
plains muhly	U U D U	U U D U	U U D U	U U D U	U U D U	U U D U	U U D U
prairie junegrass	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
prairie sandreed	U D D U	U D U U	U D D U	U D U U	U D U U	U D D U	U D D U
red threeawn	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
ring muhly	N N N N	U U U U	N N N N	U U U U	U U U U	N N N N	N N N N
sand dropseed	U D U N	N U D N	U D U N	N U D N	N U D N	U D U N	U D U N
sideoats grama	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U
switchgrass	U D D U	U D U U	U D D U	U D U U	U D U U	U D D U	U D D U
western wheatgrass	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
sun sedge	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
threadleaf sedge	U D U D	U P N D	U D U D	U P N D	U P N D	U D U D	U D U D
Forbs							
American vetch	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D
bigtop dalea	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U D P U
Colorado greenthread	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	U U U U
cutleaf evening-primrose	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	U U U U
dotted gayfeather	U U D U	U D P U	U U D U	U D P U	U D P U	U U D U	U U D U
hairy goldaster	U U D U	N N N N	U U D U	N N N N	N N N N	U U D U	U U D U
Hood's phlox	U D U U	U P P U	U D U U	U P P U	U P P U	U D U U	U D U U
ironplant goldenweed	U D D U	U P P U	U D D U	U P P U	U P P U	U D D U	U D D U
narrowleaf poisonvetch	U U U U	U D U U	U U U U	U D U U	U D U U	U U U U	U U U U
penstemon	U U U U	U P P U	U U U U	U P P U	U P P U	U U U U	U U U U
purple prairie clover	U P P D	U P P U	U P P D	U P P U	U P P U	U P P D	U P P D
rush skeletonplant	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	U U U U
scarlet globemallow	U D D U	U P P U	U D D U	U P P U	U P P U	U D D U	U D D U
silky crazyweed	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
slimflower scurfpea	N N N N	N U U N	N N N N	N U U N	N U U N	N N N N	N N N N
upright prairie coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U U D U
variable senecio	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
western ragweed	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U
woolly locoweed	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
Shrubs							
broom snakeweed	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
fourwing saltbush	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P	P D D P
fringed sagebrush	U N N U	U D D U	U N N U	U D D U	U D D U	U N N U	U N N U
plains pricklypear	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
purple pincushion	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
skunkbush sumac	D U U D	D U U D	D U U D	D U U D	D U U D	D U U D	D U U D
small soapweed	D P N D	D P N D	D P N D	D P N D	D P N D	D P N D	D P N D
spreading buckwheat	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
winterfat	P P P P	P P P P	P P P P	P P P P	P P P P	P P P P	P P P P

N = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic

[†] Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions however, *continuous grazing is not recommended*. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community	Production (lbs./acre)	Stocking Rate (AUM/acre)
Sideoats Grama, Little Bluestem, Western Wheatgrass, Winterfat (HCPC)	900	0.29
Blue Grama with Decreased Mid/Tall Grasses and Shrubs	450	0.14
Blue Grama Sod w/Remnant Sideoats/Little Bluestem, Increased Soapweed	200	0.06
Low Plant Density, Excessive Litter	*	*
Red Threeawn, Annuals, Bare Ground	*	*

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangelands in this area provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable forage analysis.

* Highly variable; stocking rate needs to be determined on site.

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B. Infiltration and runoff potential for this site is moderate. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where shortgrasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

- (R067BY002CO) – Loamy (formerly Loamy Plains)
- (R067BY008CO) – Loamy Slopes
- (R067BY036CO) – Overflow

Similar Sites

- (R067BY008CO) – Loamy Slopes
[flatter slopes (5-9%), less tall warm season grasses]

Inventory Data References

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site description include: Harvey Sprock, Rangeland Management Specialist, NRCS; Ben Berlinger, Rangeland Management Specialist, NRCS; James Borchert, Soil Scientist, NRCS; Terri Skadeland, Biologist, NRCS.

State Correlation

This site is specific to Colorado.

Field Offices

Akron, Burlington, Cheyenne Wells, Flagler, Fort Morgan, Hugo, Kiowa, Simla, Sterling

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://hpccsun.unl.edu>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://wcc.nrcs.usda.gov>)

USDA, NRCS. National Range and Pasture Handbook, September 1997

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (<http://nasis.nrcs.usda.gov>)

USDA, NRCS. 2004. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Andrews, R. and R. Righter. 1992. Colorado Birds. Denver Museum Nat. Hist., Denver, CO. 442 pp.

Armstrong, D.M. 1972. Distribution of mammals in Colorado. Univ. Kansas Museum Nat. Hist. Monograph #3. 415 pp.

Colorado Breeding Bird Atlas. 1998. Hugh Kingery, Ed., Dist. CO Wildlife Heritage Found., P.O. Box 211512, Denver, CO, 80221. 636 pp.

Fitzgerald, J.P., C.A. Meaney, and D.M. Armstrong. 1994. Mammals of Colorado. Denver Museum Nat. Hist. Denver, CO. 467 pp.

Hammerson, G.A. 1986. Amphibians and reptiles in Colorado. CO Div. Wild. Publication Code DOW-M-I-3-86. 131 pp.

Rennicke, J. 1990. Colorado Wildlife. Falcon Press, Helena and Billings, MT and CO Div. Wildlife, Denver CO. 138 pp.

Site Description Approval

/s/

03/25/2004

State Range Management Specialist

Date